

PLANT PRESSING WITH PLASTIC SPONGES — There has been little change in the basic method of preserving plant material for herbarium specimens since plants were first dried and pressed between sheets of paper. There have, however, been changes in techniques as materials have become available which have made possible quicker or more satisfactory drying with a consequent improvement in the resulting specimens. There is a satisfaction in fine herbarium specimens not only from the esthetic and craftsman's point of view in presenting the nearest possible approximation to the living plant but also for the plant scientist, enabling him to make examinations and accurate appraisals that are often difficult or impossible with poorly preserved material.

Rapid drying has always been regarded as desirable to hold to a minimum changes in the plant tissues and forestall the action of bacteria and fungi in destroying them. The use of newsprint and driers of blotting paper ordinarily served this purpose well with many plants, but under difficult field conditions the resulting specimens left much to be desired. The first real improvement came in the years just previous to 1910 as J. Franklin Collins reported to the members of the New England Botanical Club (*Rhodora* 12:221-224) that he, as well as Professors M. L. Fernald and K. M. Wiegand and others, had been using corrugated cardboard as ventilators in their plant presses. They all reported that the use of the corrugated cardboard speeded the drying process and improved the quality of the finished specimens. These collectors varied considerably in their use of these ventilators especially in the frequency with which they inserted them in building their presses and in whether or not the cardboard was smooth-faced on one or both sides.

The use of ventilators with both faces smooth and with the corrugations running crosswise rather than longitudinally does not seem to have been generally accepted until after 1918 when George E. Nichols and Harold St. John (*Rhodora* 20:153-160) pointed out the advantages of such ventilators. The use of these ventilators and insertion next to each drier is now standard procedure. The problem of thick and bulky



specimens continued to plague botanists and they resorted to various paddings of paper and cotton-wool to fill spaces next to thick structures and to level out the press.

In 1960 Jennie V. A. Dieterle (*Rhodora* 62:322-324) described a method of holding bulky specimens firmly and uniformly against herbarium sheets while glueing them in place. This entailed the use of large sand bags which pressed all parts of the specimen flat against the sheet while the glue dried. This procedure tested at the University of Michigan has been in use at Kew Herbarium in England for years. The sand bags suggested the idea of pressing bulky specimens in this way in the first place but in some manner that would eliminate the cumbersome sandbags.

Plastic sponges seemed to offer a material that would fit around thick stems and other parts and would press and flatten bulky material without crushing. A number of synthetic sponges were tried by using them in an ordinary plant press in place of one of the driers. One sponge distributed by Magla Products, Inc., 412 Halsey Street, Newark 2, New Jersey seemed to have the requisite qualities of compressibility and recovery along with moisture absorption. A quantity of this sponge material was ordered cut in sheets 18" x 12" x 1" to fit a standard plant press. Trial of these sheets since the fall of 1962 has given remarkably good results on many "hard to press" materials where great variability of thickness of the specimen would ordinarily give indifferent to poor results. The most striking results are possibly with branches of deciduous woody plants having leaves, fruits, flowers or nuts. Thin leaves and delicate floral parts can be pressed perfectly even if adjacent to thick stems, and firm berries are not crushed but flattened only on the underside. The procedure has been to lay out the specimen in the usual manner on, but not between, the folds of newsprint which overlays the usual drier and ventilator (See plate 1297). The sheet of sponge is applied directly on top of the plant material and in case of recalcitrant specimens it may be rolled on from one end while arranging leaves, etc. Once in contact with the sponge surface the plants rarely move. A ventila-





Plate 1297

Press assembly showing a plastic sponge with standard plant pressing equipment. Note that the sponge is applied directly on the specimen.



tor is applied over the sponge and the press built up in this order. Of course, a press assumes gigantic height before being strapped down and about 20 to 25 sheets are all one should attempt in a single press. Care should be taken to build the press evenly and to tighten the straps alternately. Changing the underlying newsprint and drier and even the ventilators will speed the drying process as in any pressing procedure. However, just releasing the press at intervals and allowing the sponges to expand will give considerable ventilation and assist greatly in the drying. Many observers feel that the use of these sponges gives better color preservation than is usually achieved. The greatest advantage is undoubtedly the fact that all parts are evenly pressed against the flat surface of the drier and ventilator without the thicker parts being crushed or the thin and delicate ones underpressed or left in a void.

Material pressed in this manner mounts on the herbarium sheet with ease and if the glue method of mounting is used the sponge plus a weight can be used until the glue has dried if care is taken to remove surplus glue before leaving for any length of time. Filmy and delicate specimens such as some ferns, violets, aquatic plants, grasses, etc., can be mounted with the aid of these sponges. The specimens to be mounted should be arranged in mirror position upside down on the sponge. The herbarium sheet is then entirely covered with dilute glue and applied to the specimens on the sponge in the manner of printing or lithographing thus transferring the flimsy specimens to the mounting paper exactly as arranged on the sponge. Surplus glue can be removed from the herbarium sheet by blotting with an extra sponge. The sponges wash easily and still retain their original texture. If heat is used to speed the drying as many botanists do with the aid of various heat sources these sponges remain uninjured at any heats ordinarily used. This material has been autoclaved at 15 lbs. for 30 minutes without apparent change in texture or springyness.

After two seasons of fairly continuous use in both field and herbarium these sponges show almost no signs of wear



and tear. Repeated heavy compression over bulky and rough specimens has not permanently deformed or distorted their dimensions. When soiled with plant juices, nectar or other exudates they are easily washed and dried, regaining their original appearance and texture.

The accompanying illustration shows the use of one of the plastic sponge sheets on a specimen of *Ilex verticillata* along with driers, ventilators, wooden press frames, and web straps. On occasion, a third strap may be found desirable if the material being pressed is particularly rough and bulky. Next to the press is a fruiting specimen of American Beech (*Fagus grandifolia*). As can be seen the leaves were pressed and the stem flattened without crushing the burrs or nuts, a result almost impossible by any other method. In case of large diameter stems or fruits as in the hickorys or pines, the thickness of two sponges may be necessary.

Probably the dimensions of future sponges should be 11" x 17" x 1" so that when compressed the edges will not squeeze over the ventilating holes in the corrugated cardboard. This plastic sponge material seems to be as much of an improvement for the pressing of certain types of specimens as the use of corrugated cardboard was for all botanical herbarium specimens fifty years ago.

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